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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/579,903	11/15/2006	Tomiji Tanaka	SON-3163	6919
23353 7590 11/16/2007 RADER FISHMAN & GRAUER PLLC LION BUILDING 1233 20TH STREET N.W., SUITE 501 WASHINGTON, DC 20036			EXAMINER CARTER, MICHAEL W	
			ART UNIT 2828	PAPER NUMBER
			MAIL DATE 11/16/2007	DELIVERY MODE PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary

Application No.

10/579,903

Applicant(s)

TANAKA ET AL.

Examiner

Michael Carter

Art Unit

2828

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 10 September 2007.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-18 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-18 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 19 May 2006 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date <u>9/10/07, 8/27/07, 5/19/06</u> . | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Claim Rejections - 35 USC § 103

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. **Claims 1, 3-4, and 11** are rejected under 35 U.S.C. 103(a) as being unpatentable over Asakura et al., US Patent 4,913,525 (hereinafter referred to as Asakura), in view of Kato et al., US Patent 6,488,419 (hereinafter referred to as Kato).
3. **For claim 1**, Asakura teaches, an external cavity type semiconductor laser, comprising: a semiconductor laser device having a plurality of layers including an activation layer (figure 2, label 14); a grating that receives a beam emitted from the semiconductor laser device through the window glass and returns a beam having a predetermined wavelength to the semiconductor laser device (figure 2, label 12 or figure 4, label 3); and a lens disposed between the semiconductor laser device and the grating and collects the beam emitted from the semiconductor laser device (figure 2, label 2).

Asakura does not teach a window glass disposed opposite to a beam emission surface of the semiconductor laser device; wherein the window glass is arranged in a first state or a second state, in the first state the window glass is in parallel with a first axis nearly perpendicular to a surface that is in parallel with at least one of boundary surfaces of the activation layer and other layers of the semiconductor laser device, the

window glass being nearly in parallel with at least one of the boundary surfaces of the activation layer and the other layers of the semiconductor laser device, the window glass being nearly in parallel with the beam emission surface of the semiconductor laser device, the window glass being not in parallel with a second axis perpendicular to the first axis, in the second state the window glass is not in parallel with the first axis, the window glass being nearly in parallel with the second axis.

However, Kato does teach a window glass disposed opposite to a beam emission surface of the semiconductor laser device; wherein the window glass is arranged in a first state or a second state, in the first state the window glass is in parallel with a first axis nearly perpendicular to a surface that is in parallel with at least one of boundary surfaces of the activation layer and other layers of the semiconductor laser device, the window glass being nearly in parallel with at least one of the boundary surfaces of the activation layer and the other layers of the semiconductor laser device, the window glass being nearly in parallel with the beam emission surface of the semiconductor laser device, the window glass being not in parallel with a second axis perpendicular to the first axis, in the second state the window glass is not in parallel with the first axis, the window glass being nearly in parallel with the second axis (figure 2, label 36) in order to hermetically seal the laser (column 7, lines 66-67).

It would have been obvious to one of ordinary skill in the art, at the time the invention was made, to Use Kato's window to seal Asakura's laser.

4. **For claim 3**, Kato further teaches the window glass is arranged in the second state.

The combination does not teach the angle between the surface and the first axis is in the range from 1° to 1.6° .

However, it would have been obvious to one of ordinary skill in the art, at the time the invention was made, to set the angle between 1° to 1.6° , since it has been held that where the general conditions of a claim are disclosed in the prior art, discovering workable ranges only involves routine skill in the art.

5. **For claim 4**, Asakura teaches the semiconductor laser device and the grating are arranged so that the semiconductor laser device supplies an S wave to the grating (column 1, lines 50-57).

6. **For claim 11**, The combination does not teach a reflectance of a first order diffracted beam of the grating is in the range from 10% to 30%.

However, it would have been obvious to one of ordinary skill in the art, at the time the invention was made, to set the angle from 10% to 30%, since it has been held that where the general conditions of a claim are disclosed in the prior art, discovering optimum or workable ranges only involves routine skill in the art.

7. **Claims 2, and 7** are rejected under 35 U.S.C. 103(a) as being unpatentable over Asakura, in view of Kato, and further in view of Verdiell et al., US Patent 5,870,417 (hereinafter referred to as Verdiell).

8. **For claim 2**, the previous combination does not the window glass is arranged in the first state, and wherein an angle between a surface of the window glass and the second axis is in the range from 5° to 12° .

However, Verdiell does teach angle of 5° to 12° with the second axis in order to prevent optical feedback into the optical cavity (column 5, lines 8-20).

It would have been obvious to one of ordinary skill in the art, at the time the invention was made, to combine angle with the previous combination in order to prevent optical feedback.

9. **For claim 7** the previous combination teaches using an AR coating (figure 2, label 5).

The previous combination does not teach a reflectance of a beam emission surface of the laser diode is 3% or less.

However, Verdiell does teach using an AR coating with 1% reflectance in order to suppress self oscillation (column 4, lines 14-16).

It would have been obvious to one of ordinary skill in the art, at the time the invention was made to have a reflectance 3% or less in order to suppress self oscillation.

10. **Claims 5-6, and 12** are rejected under 35 U.S.C. 103(a) as being unpatentable over Asakura, in view of Kato, and further in view of Mizuno et al., "100mW Kink-free Blue-violet Laser Diodes with Low Aspect Ratio," Proceeding of the 11th Sony Research Forum, 2001 (hereinafter referred to as Mizuno).

11. **For claim 5**, the previous combination does not teach the semiconductor laser device has an output power of at least 45 mW, and wherein when the semiconductor laser device emits a beam with an output power of 45 mW or less, a kink does not occur.

However, Mizuno does teach a semiconductor device has an output power of at least 45 mW, and wherein when the semiconductor laser device emits a beam with an output power of 45 mW or less, a kink does not occur (abstract).

It would have been obvious to one of ordinary skill in the art, at the time the invention was made, to combine the laser taught in Mizuno with the device of the previous combination in order to provide a blue single mode laser.

12. **For claim 6**, Mizuno further teaches the semiconductor laser device is a laser diode, wherein side surfaces of a ridge of the laser diode are buried with two layers of an insulation film (figure 1) to suppress the kink and a stripe width W is 1.6 μm or less (figure 6).

13. **For claim 12**, the previous combination does not teach the semiconductor laser device is a blue laser diode.

However, Mizuno does teach a blue laser diode (abstract).

It would have been obvious to one of ordinary skill in the art, at the time the invention was made, to combine the laser taught in Mizuno with the device of the previous combination in order to provide a blue single mode laser.

14. **Claims 8-10** are rejected under 35 U.S.C. 103(a) as being unpatentable over Asakura, in view of Kato, and further in view Sidorin et al. US Patent 7,027,469 (hereinafter referred to as Sidorin).

15. **For claims 8-10**, the previous combination does not teach the details that the NA is between .3 and .7 or that the cavity length is 10 mm to 30 mm.

However, Sidorin teaches the cavity is 1 cm to 3 cm (column 17, lines 66-67) and the NA is .5 (column 12, line 33).

It would have been obvious to one of ordinary skill in the art, at the time the invention was made, to combine the lengths and NA in Sidorin with the previous combination as they are workable ranges known in the art.

16. **Claims 13-18** is rejected under 35 U.S.C. 103(a) as being unpatentable over Asakura, Kato, Mizuno, Verdiell, and Sidorin.

17. **For claim 13**, the arguments are applied as to claims 1, 4, 5, 7-9, and 11.

18. **For claim 14**, Mizuno is further applied as in claim 12.

19. **For claim 15**, Verdiell is further applied as to claim 2.

20. **For claim 16**, Kato is further applied as to claim 3.

21. **For claim 17**, Mizuno is further applied as to claim 6.

22. **For claim 18**, Sidorin is further applied as to claim 10.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Michael Carter whose telephone number is (571) 270-1872. The examiner can normally be reached on Monday-Friday, 7:00 a.m.-4:30 p.m., EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, MinSun Harvey can be reached on (571) 272-1835. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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MI
MC

[Handwritten signature]
**MINSUN OH HARVEY
PRIMARY EXAMINER**